CLAIMS

1. A method for purifying a lipopeptide antibiotic, said method comprising the steps of:

contacting an aqueous solution of the lipopeptide antibiotic and a divalent metal ion with an organic solvent, thereby extracting the lipopeptide antibiotic into the organic solvent; and

contacting the organic solvent extract of the lipopeptide antibiotic with acid.

2. The method of Claim 1 in which the aqueous solution is a fermentation broth or a culture.

3. The method of Claim 1 in which the lipopeptide antibiotic is a cyclic depsipeptide or a cyclic peptide.

4. The method of Claim 1 in which the lipopeptide antibiotic is selected from the group consisting of zaomycin, crystallomycin, amphomycin, glumamycin, daptomycin, antibiotic A-1437, antibiotic A-54145 and tsushimycin.

5. The method of Claim 1 in which the lipopeptide antibiotic is laspartomycin.

6. The method of Claim 1 in which the lipopeptide antibiotic is aspartocin.

7. The method of Claim 1 in which the lipopeptide antibiotic is antibiotic A-21978C or daptomycin.

8. The method of Claim 1 in which the pH of the aqueous solution of the lipopeptide antibiotic is adjusted to a basic pH.

9. The method of Claim 8 in which the molar concentration of divalent cation relative to carboxylate groups in the lipopeptide antibiotic is between about 4:1 and about 10:1.

10. The method of Claim 2 in which the pH of the fermentation broth is adjusted to an acidic pH and cooled to about 4°C.

11. The method of Claim 10 in which the fermentation broth is centrifuged and the centrifugate suspended in a second aqueous solution.

12. The method of Claim 10 in which the pH is about 2.0.

13. The method of Claim 11 in which the pH of the second aqueous solution is adjusted to about pH 7.0.

14. The method of Claim 13 in which the molar concentration of divalent cation relative to carboxylate groups in the lipopeptide antibiotic in the second aqueous solution is between about 4:1 and about 10:1.

15. The method of Claim 14 in which the pH is adjusted to a basic pH.

16. The method of any one of Claims 8 or 15 in which the adjusted pH is in the range of about pH 8.0 to about pH 9.0.

17. The method of any one of Claims 9 or 15 in which the divalent cation is selected from the group consisting of Ca^{2+}, Mg^{2+} and Zn^{2+}.

18. The method of Claim 1 further comprising:

extracting the lipopeptide antibiotic into a third aqueous solution;

extracting the lipopeptide antibiotic into a second organic solvent;

extracting the lipopeptide antibiotic into a fourth aqueous solution; and

concentrating the aqueous solution to provide a salt of the lipopeptide antibiotic.

19. The method of Claim 18, wherein the organic extract of the lipopeptide antibiotic is extracted into the third aqueous solution by washing with an aqueous base solution.

20. The method of Claim 18, wherein the third aqueous solution of the lipopeptide antibiotic is extracted into the second organic solvent by acidifying the third aqueous solution of the lipopeptide antibiotic and contacting with the second organic solvent.

21. The method of Claim 18, wherein the salt of lipopeptide antibiotic is acidified to provide a free acid of lipopeptide antibiotic.

22. The method of Claim 21 in which the organic solvent and the second organic solvent is 1-butanol.

23. A method of isolating an acidic lipopeptide antibiotic, comprising the steps:

contacting an aqueous solution comprising an acidic lipopeptide antibiotic with an organic solvent under conditions in which the antibiotic partitions into the organic solvent; and

recovering the antibiotic from the organic solvent.

24. A method of isolating an acidic lipopeptide antibiotic, comprising the steps of:

(a) contacting an aqueous composition comprising the lipopeptide antibiotic and a divalent metal cation with an organic solvent, wherein said aqueous composition has a pH above the isoelectric point of the lipopeptide antibiotic;

(b) acidifying the organic phase obtained from step (a); and

(c) contacting the acidified organic phase of step (b) with an aqueous solvent.